DEPARTMENT OF THE INTERIOR U.S. GEOLOGICAL SURVEY 120° 37'30" Qhaf1 Qhpaf Qhaf1 +TKmd Qhaf2 TKmt Qhaf2 Qhaf1 **Qhpaf** QTt? Qhaf1 BM 227 Qhaf2 QTE Qhaf1 **Ohpaf** Qhaf1 TKmdo Qpaf1 QTt Qhaf2 Qhaf2 35 34 Qpaf2/ QTt Qhaf2 0 Qpaf2 Kpsh Qhf<sub>1</sub> Qhf2 Qhaf1 Ohf1 Qhf<sub>3</sub> TKmt Qhf<sub>1</sub> Base from U.S. Geological Survey, 1956 Geology by J.A. Bartow, 1987-89, and W.R. Lettis, 1980-82, 1989. (Photorevised 1971) SCALE 1:24 000 Polyconic projection 1000 0 1000 2000 3000 4000 5000 6000 7000 FEET 1 .5 0 CONTOUR INTERVAL 40 FEET

OPEN-FILE REPORT 90-271

## DISCUSSION

The map area lies along the west side of the San Joaquin Valley and includes the Quaternary alluvial fans of the western part of the valley, as well as a portion of the outcropping Cenozoic and Mesozoic strata of the Diablo Range. The area includes strata ranging in age from Late Cretaceous to Holocene and includes the type sections of the Panoche (part) and Moreno Formations. Field mapping of bedrock units was guided by reference to previously published geologic maps (Payne, 1951; Schoellhammer and Kinney, 1953; Dibblee, 1975). The mapping, done on air photos (mostly at a scale of about 1:30,000), was transferred to the 1:24,000 scale base map by means of a Kern PG-2 plotter.

The unconsolidated and semi-consolidated sediment of the Tulare Formation and the unnamed Quaternary alluvial deposits are lithologically similar and are difficult to differentiate. The Quaternary deposits are divided into stratigraphic units primarily on the basis of relative age determined from geomorphic and pedologic criteria such as: (1) relative topographic position in a sequence of inset alluvial fans or stream terraces, (2) relative degree of soil-profile development, and (3) relative degree of surface modification, including the development of microrelief or

dissection.

The Tulare Formation has been deformed, but not as much as the older Tertiary units. The Tulare has a lower dip and can be seen to overlap older units. Younger alluvial units are not noticably deformed, except for a minor increase in eastward gradient on older depositional surfaces. Physiography and degree of soil development are the principal criteria used in mapping these younger units. Poor soil development on much of the valley alluvium suggests that a veneer of Holocene age alluvium covers most of the alluvial fan area; older fans are limited to small areas near the mountain front. The late Cenozoic stratigraphy of area adjacent to this map area on the northwest was discussed by

## REFERENCES CITED

Briggs, L.I., Jr., 1953, Geology of the Ortigalita Peak quadrangle, California: California Division of Mines and Geology Bull. 167, 61 p.

Dibblee, T.W., Jr., 1975, Geologic maps of the Pacheco Pass, Hollister, Quien Sabe, Ortigalita Peak, San Benito, Panoche Valley, and "Tumey Hills" quadrangles, San Benito, Santa Clara, Merced, and Fresno Counties, California: U.S. Geological Survey Open-File Report 75-394, scales 1:62,500.

Lettis, W.R., 1985, Late Cenozoic stratigraphy and structure of the west margin of the central San Joaquin Valley, California, in Weide, D.L., ed., Soils and Quaternary geology of the southwestern United States: Geological Society of America Special Paper 203, p. 97-114.

Payne, M.B., 1951, Type Moreno Formation and overlying Eocene strata on the west side of the San Joaquin Valley, Fresno and Merced Counties, California: California Division of Mines and Geology, Special Report 9, 29 p.

Payne, M.B., 1960, Type Panoche, Panoche Hills area, Fresno County, California: Society of Economic Paleontologists and Mineralogists, 1960 Spring Field Trip, Guidebook, p.

Schoellhamer, J.E., and Kinney, D.M., 1953, Geology of a part of Tumey and Panoche Hills, Fresno County, California: U.S. Geological Survey Oil and Gas Investigations Map OM 128, scale 1:24,000.

Alluvial fan deposits (Holocene and Pleistocene) -- Unconsolidated gravel, sand,

silt, and clay; divided into:

Deposits in active channels and in areas of
active sedimentation on fan surfaces—
Forms thin lobes extending 2-4 km eastward from
edge of Panoche Hills and also forms northward
extension of Panoche Creek alluvial fan along

DESCRIPTION OF MAP UNITS

CORRELATION OF MAP UNITS

Holocene

Pleistocene

Pliocene

Miocene

Eocene

Paleocene

Cretaceous

Oligocene(?)

and Eocene

QUATERNARY

TERTIARY

- CRETACEOUS

Qhf,

Qhf<sub>3</sub>

Qhaf2 Qhf2

Qhaf1

Qhpaf

Qpaf2

Qpaf1

QTt

TKmd

TKmm

TKmt

TKmdo

Kp

Kpsh

Deposits on inactive areas of fans--Forms
major part of fan surfaces adjoining Panoche
Hills and characterized by poorly-developed
mima-mound relief. Probably late to middle

east edge of map. Probably latest Holocene age

Deposits on slightly to moderately dissected older fans--Restricted to areas near edge of Panoche Hills and characterized by well-develolped mima-mound relief. Probably early Holocene and late Pleistocene age

Deposits on moderately dissected older fans-Restricted to small areas near edge of Panoche Hills. Probably late Pleistocene age

Deposits on highly dissected older fans-Restricted, on this map, to small remnants of

Floodplain deposits (Holocene) -- Unconsolidated gravel, sand, silt, and clay in active channel and on incised terraces of Panoche Creek.

Ohf1, active channel and lowest terraces; Ohf2, intermediate terraces; Ohf3, highest terraces (historic floodplain). Probably late Holocene

old fan apex areas. Probably middle

Pleistocene age

Tulare Formation (Pleistocene and Pliocene?) -Weakly consolidated mudstone, siltstone, and
pebble conglomerate, and unconsolidated lenses
of sand. Contains local accumulations of
caliche. Age is late Pliocene(?) and early

Tol

Oro Loma Formation of Briggs (1953) (Pliocene and Miocene?) -- Friable or locally calcareous sandstone and pebbly sandstone, commonly crossbedded; pebble conglomerate; and mudstone or claystone. Age is late Miocene(?) and

Kreyenhagen Shale (Eocene) -- Thin-bedded, brown shale and mudstone, and white, diatomaceous shale. Glauconitic sandstone locally at base Age is middle and late Eocene

Domengine Sandstone (Eocene) -- Gray, quartzose sandstone, locally pebbly and fossiliferous; white anauxitic sandstone; and gray mudstone Sandstone of Payne (1951). Age is early and middle Eocene

Lodo Formation (Eocene and Paleocene) -- Gray claystone and siltstone. Medium- to coarse-grained glauconitic sandstone containing molluscan fossils at the base. Age is late Paleocene and early Eocene

Laguna Seca Formation of Payne (1951) Eocene?

and Paleocene) -- Gray, fine-grained, micaceous sandstone and siltstone; white kaolinitic sandstone and locally red mudstone. Age is late Paleocene and early Eocene(?)

Moreno Formation (Paleocene and Upper
Cretaceous) -- divided into:
Dos Palos Shale Member -- Brown to grayish-brown
shale, silty shale, and glauconitic siltstone.
Age is Maestrichtian(?) and Danian

Cima Sandstone Lentil -- Light gray to tan, fine-grained to very fine grained, silty sandstone; massive to poorly bedded and commonly concretionary. Contains few molluscan

Marca Shale Member--Tan to grayish-brown,
laminated siliceous shale and diatomaceous
shale, containing white to light brown
calcareous concretions. Age is Maestrichtian

Tierra Loma Shale Member--Dark brown shale and

sandstone dikes. Age is Maestrichtian

Dosados Sandstone and Shale Member--Dark brown silty shale and interbedded thin, fine-grained, turbidite sandstone beds; contains generally thick channelized bodies of poorly-bedded sandstone. Age is Maestrichtian

mudstone, containing varying amount of thin-

bedded sandstone; locally phosphatic. Common

Panoche Formation (Upper Cretaceous) -- Arkosic sandstone and interbedded siltstone or shale.
Divided into:
Sandstone--Thick- to thin-bedded sandstone, commonly concretionary, and interbedded gray-

brown silstone and shale. Equivalent to

Marlife Shale of Payne (1960). Age is Campanian

Television Sandstone and Uhalde Sandstone and Shale of Payne (1960). Age is Campanian and Maestrichtian

Kpsh

Shale--Gray mudstone and shale containing thin sandstone interbeds. Equivalent to upper

\_\_\_\_\_\_ Contact--Dashed where indefinite

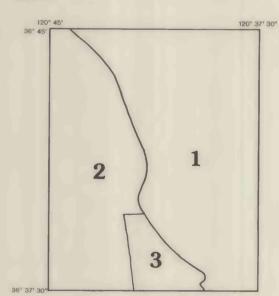
Fault--Dashed where indefinite, dotted where concealed; U, upthrown side; D, downthrown side

Strike and dip of beds

Landslide--Arrows show inferred direction of movement

INDEX TO GEOLOGIC MAPPING

 J.A. Bartow, with additional information from Payne (1951, Fig. 4) and Dibblee (1975)
 Schoellhamer and Kinney (1953), modified by J.A. Bartow



PRELIMINARY GEOLOGIC MAP OF THE CHOUNET RANCH QUADRANGLE, CALIFORNIA